WHAT IS CLAIMED IS:

1. A system for providing a scalable objective metric for evaluating video quality of a video image, said system comprising:

an objective metric controller capable of receiving a plurality of objective metric figures of merit from a plurality of objective metric model units, and capable of determining said scalable objective metric from said plurality of objective metric figures of merit, wherein at least one pair of said plurality of metric model units is interdependent.

2. The system for providing a scalable objective metric for evaluating video quality of a video image as claimed in Claim 1 wherein the number of said plurality of objective metric figures of merit may vary from two to N, where N is an integer number.

1   3.   The system for providing a scalable objective metric for

2   evaluating video quality of a video image as claimed in Claim 1

3   wherein said objective metric controller is capable of determining

4   said scalable objective metric from a correlation factor derived

5   from a mathematical description of an interdependency of said at

6   least one interdependent pair of said plurality of metric model

7   units.

1   4.   The system for providing a scalable objective metric for

2   evaluating video quality of a video image as claimed in Claim 1

3   wherein said objective metric controller is capable of determining

4   said scalable objective metric from a correlation factor derived

5   using a neural network algorithm that employs both objective

6   quality scores and subjective quality scores.

1 5.   The system for providing a scalable objective metric for

2 evaluating video quality of a video image as claimed in Claim 1

3 comprising a weighting unit that assigns weight values to each of a

4 plurality of non-interdependent objective metric figures of merit

5 by using a correlation factor, r(i), for each of said objective

6 metric figures of merit, where each correlation factor, r(i), for

7 an objective metric figure of merit represents how well the

8 objective   metric   figure   of   merit   evaluates   video   image

9 characteristics.

1 6.   The system for providing a scalable objective metric for

2 evaluating video quality of a video image as claimed in Claim 1

3 wherein said plurality of objective metric model units comprises at

4 least one objective metric model unit for a desirable video image

5 feature and at least one objective metric model unit for an

6 undesirable video image feature.

1   7.   The system for providing a scalable objective metric for

2   evaluating video quality of a video image as claimed in Claim 5

3   wherein said objective metric controller calculates a value, F, for

4   said scalable objective metric from interdependent objective

5   metrics using a mathematical description of interdependencies of

6   said interdependent objective metrics.

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8.   The system for providing a scalable objective metric for

evaluating video quality of a video image as claimed in Claim 5

wherein said objective metric controller is capable of calculating

a plurality of sums for a plurality of non-interdependent objective

metrics where each sum, $S(r(i))$, is equal to the sum of each

product of weight value, $w(i)$, and figure of merit, $f(i)$, for each

of said correlation factors, $r(i)$.

1 9. The system for providing a scalable objective metric for

2 evaluating video quality of a video image as claimed in Claim 8

3 wherein said objective metric controller is capable of obtaining

4 said scalable objective metric by selecting said scalable objective

5 metric to be the maximum value of the plurality of sums, $S(r(i))$,

6 where said maximum value represents the best correlation of

7 objective metric measurements of said video image with subjective

8 measurements of said video image.

1 10. The system for providing a scalable objective metric for

2 evaluating video quality of a video image as claimed in Claim 1

3 wherein said objective metric controller is capable of continually

4 determining a new value of said scalable objective metric from new

5 values of said plurality of objective figures of merit as said

6 plurality of objective metric model units continually receive new

7 video images.

1   11. The system for providing a scalable objective metric for

2   evaluating video quality of a video image as claimed in Claim 1

3   wherein said objective metric controller is capable of adding at

4   least one objective metric to said plurality of objective figures

5   of merit, and wherein said objective metric controller is capable

6   of deleting at least one objective metric from said plurality of

7   objective figures of merit.

12. The system for providing a scalable objective metric for

evaluating video quality of a video image as claimed in Claim 1

wherein said objective metric controller comprises:

a controller capable of receiving a plurality of objective

metric figures of merit, $f(i)$, from a plurality of objective metric

model units; and

7   a metric calculation algorithm contained within a memory

8   coupled to said controller, said metric calculation algorithm

9   containing instructions capable of being executed by said

10   controller to determine a value, F, for said scalable objective

11   metric from a weighted average of said plurality of objective

12   metric figures of merit, $f(i)$, wherein at least one pair of said

13   plurality of objective metric model units is interdependent.

1   13. The system for providing a scalable objective metric for

2   evaluating video quality of a video image as claimed in Claim 1

3   comprising:

4   a plurality of objective metric model units wherein at least

5   one pair of said plurality of objective metric model units is

6   interdependent;

7   an objective metric controller capable of receiving a

8   plurality of objective metric figures of merit from said plurality

9   of objective metric model units, wherein said objective metric

10   controller is capable of determining a value, F, for said scalable

11   objective metric from a plurality of non-interdependent objective

12   metric figures of merit, $f(i)$, and capable of determining a value,

13   F, for said scalable objective metric from at least two

14   interdependent objective metrics, wherein said value F represents

15   an objective metric that represents a maximum level of correlation

16   of objective metric measurements of video quality and subjective

17   measurements of video quality.

1   14. A method for providing a scalable objective metric for

2   evaluating video quality of a video image comprising the steps of:

3   receiving in an objective metric controller a plurality of

4   objective metric figures of merit from a plurality of objective

5   metric model units wherein at least one pair of said plurality of

6   objective metric model units is interdependent; and

7   determining said scalable objective metric from said plurality

8   of said objective metric figures of merit.

10   15. The method for providing a scalable objective metric for

2   evaluating video quality of a video image as claimed in Claim 14

3   wherein the step of determining said scalable objective metric from

4   said plurality of said objective metric figures of merit comprises

5   the step of:

6   determining said scalable objective metric from a correlation

7   factor derived from a mathematical description of an

8   interdependency of said at least one interdependent pair of said

9   plurality of said objective metric model units.

1   16.   The method for providing a scalable objective metric for

2 evaluating video quality of a video image as claimed in Claim 14

3 wherein the step of determining said scalable objective metric from

4 said plurality of said objective metric figures of merit comprises

5 the step of:

6   determining said scalable objective metric from a correlation

7 factor derived using a neural network algorithm that employs both

8 objective quality sources and subjective quality sources.

1   17.   The method for providing a scalable objective metric for

2 evaluating video quality of a video image as claimed in Claim 14

3 further comprising the steps of:

4   assigning weight values to each of said plurality of objective

5 metric figures of merit by using a correlation factor, $r(i)$, for

6 each of a plurality of non-interdependent objective metric figures

7 of merit, where each correlation factor, $r(i)$, for an objective

8 metric figure of merit represents how well the objective metric

9 figure of merit evaluates video image characteristics.

1   18.   The method for providing a scalable objective metric for

2   evaluating video quality of a video image as claimed in Claim 14

3   wherein said plurality of objective metric model units comprises at

4   least one objective metric model unit for a desirable video image

5   feature and at least one objective metric model unit for an

6   undesirable video image feature.

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19.   The method for providing a scalable objective metric for

evaluating video quality of a video image as claimed in Claim 14

further comprising the steps of:

receiving in said objective metric controller new values of

said plurality of objective metric figures of merit from said

plurality of objective metric model units as said plurality of

7   objective metric model units receive new video images; and

8   continually determining a new value of said scalable objective

9   metric from said new values of said plurality of objective metric

10   figures of merit.

1   20. The method for providing a scalable objective metric for

2 evaluating video quality of a video image as claimed in Claim 14

3 further comprising the steps of:

4   determining a weight value, w(i), for each of said plurality

5 of objective metric figures of merit;

6   keeping said weight values constant; and

7   calculating said scalable objective metric using said constant

8 weight values.

1   21. A method for providing a scalable objective metric for

2 evaluating video quality of a video image comprising the steps of:

3   receiving in an objective metric controller a plurality of

4 objective metric figures of merit from a plurality of objective

5 metric model units wherein each of said plurality of objective

6 metric model units is independent; and

7   determining said scalable objective metric from said plurality

8 of said objective metric figures of merit from a correlation factor

9 derived using a neural network algorithm that employs both

10 objective quality sources and subjective quality sources.